



Guidelines for Completing the Ship/Shore Safety Check-List

Part 'A'

Bulk Liquid General – Physical Checks

1. There is safe access between the ship and shore.

The access should be positioned as far away from the manifolds as practicable. The means of access to the ship should be safe and may consist of an appropriate gangway or accommodation ladder with a properly secured safety net fitted to it.

Particular attention to safe access should be given where the difference in level between the point of access on the ship and the jetty or quay is large, or is likely to become large.

When terminal access facilities are not available and a ship's gangway is used, there should be an adequate landing area on the berth so as to provide the gangway with a sufficient clear run of space and so maintain safe and convenient access to the ship at all states of tide and changes in the ship's freeboard.

Near the access ashore, appropriate life-saving equipment should be provided by the terminal. A lifebuoy should be available on board the ship near the gangway or accommodation ladder.

The access should be safely and properly illuminated during darkness.

Persons who have no legitimate business on board, or who do not have the Master's permission, should be refused access to the ship.

The terminal should control access to the jetty or berth in agreement with the ship.

2. The ship is securely moored.

When considering this item, due regard should be given to the need for adequate fendering arrangements.

Ships should remain adequately secured in their moorings. Alongside piers or quays, ranging of the ship should be prevented by keeping all mooring lines taut. Attention should be given to the movement of the ship caused by wind, currents, tides or passing ships and the operation in progress.

Wire ropes and fibre ropes should not be used together in the same direction (i.e. as breast lines, spring lines, head or stern lines) because of the difference in their elastic properties.

Once moored, ships fitted with automatic tension winches should not use such winches in the automatic mode.

Means should be provided to enable quick and safe release of the ship in case of an emergency. In ports where anchors are required to be used, special consideration should be given to this matter.

Irrespective of the mooring method used, the emergency release operation should be agreed, taking into account the possible risks involved.

Anchors not in use should be properly secured.

3. The agreed ship/shore communication system is operative.

Communication should be maintained in the most efficient way between the Responsible Officer on duty on the ship and the Terminal Representative.

When telephones are used, the telephone both on board and ashore should be continuously manned by a person who can immediately contact his respective supervisor. Additionally, the supervisor should have a facility to override all calls.

When radio systems are used, the units should preferably be portable and carried by the supervisor or a person who can get in touch with his respective supervisor immediately. Where fixed systems are used, the guidelines for telephones should apply.

The selected primary and back-up systems of communication should be recorded on the check-list and necessary information on telephone numbers and/or channels to be used should be exchanged and recorded.

The telephone and portable radio systems should comply with the appropriate safety requirements.

4. Emergency towing-off pennants are correctly rigged and positioned.

Unless the terminal specifically advises to the contrary, emergency towing-off pennants (fire wires) should be positioned on both the off-shore bow and quarter of the ship. At a buoy mooring, emergency towing-off pennants should be positioned on the side opposite to the hose string.

There are various methods for rigging emergency towing-off pennants currently in use. Some terminals may require a particular method to be used and the ship should be advised accordingly.

5. The ship's fire hoses and fire-fighting equipment are positioned and ready for immediate use.

See Question 6 below.

6. The terminal's fire-fighting equipment is positioned and ready for immediate use.

Fire-fighting equipment on board and on the jetty should be correctly positioned and ready for immediate use.

Adequate units of fixed or portable equipment should be stationed to cover the ship's cargo deck and the jetty area, having due regard to the presence of both the ship and nearby shore tanks. The shore and ship's fire-main systems should be pressurised or be capable of being pressurised at short notice.

Both ship and shore should ensure that their fire-main systems can be interconnected in a quick and easy way utilising, if necessary, the International Shore Fire Connection (see Question 28).

7. The ship's cargo and bunker hoses, pipelines and manifolds are in good condition, properly rigged and appropriate for the service intended.

See Question 8 below.

8. The terminal's cargo and bunker hoses or arms are in good condition, properly rigged and appropriate for the service intended.

Hoses should be in a good condition and properly fitted and rigged so as to prevent strain and stress beyond design limitations.

All flange connections should be fully bolted and any other types of connections should be properly secured.

Hoses and pipelines and metal arms should be constructed of a material suitable for the substance to be handled, taking into account its temperature and the maximum operating pressure.

Cargo hoses should be indelibly marked so as to allow the identification of the products for which they are suitable, specified maximum working pressure, the test pressure and last date of testing at this pressure. If to be used at temperatures other than ambient, maximum and minimum service temperatures should be marked.

9. The cargo transfer system is sufficiently isolated and drained to allow safe removal of blank flanges prior to connection.

A positive means of confirming that both ship and shore cargo systems are isolated and drained should be in place and used to confirm that it is safe to remove blank flanges prior to connection. The means should provide protection against pollution due to unexpected and uncontrolled release of product from the cargo system and injury to personnel due to pressure in the system suddenly being released in an uncontrolled manner.

10. Scuppers and save-alls on board are effectively plugged and drip trays are in position and empty.

Where applicable, all scuppers on board should be properly plugged during the operations. Accumulation of water should be drained off periodically.

The ship's manifolds should ideally be provided with fixed drip trays in accordance with OCIMF recommendations, where applicable. In the absence of fixed containment, portable drip trays should be used.

All drip trays should be emptied in an appropriate manner whenever necessary but always after completion of the specific operation.

When only corrosive liquids or refrigerated gases are being handled, the scuppers may be kept open, provided that an ample supply of water is available at all times in the vicinity of the manifolds.

11. Temporarily removed scupper plugs will be constantly monitored.

Scuppers that are temporarily unplugged, in order to drain clean rainwater from the cargo deck for example, must be constantly and closely monitored. The scupper must be re-sealed immediately in the event of a deck oil spill or any other incident that has the potential to cause pollution.

12. Shore spill containment and sumps are correctly managed.

Shore containment facilities, such as bund walls, drip trays and sump tanks, should be properly maintained, having been sized for an appropriate containment volume following a realistic risk assessment.

Jetty manifolds should ideally be provided with fixed drip trays; in their absence, portable drip trays should be used.

Spill or slop transfer facilities should be well maintained and, if not an automatic system, should be readily available to deal with spilled product or rainwater.

13. The ship's unused cargo and bunker connections are properly secured with blank flanges fully bolted.

See Question 14 below.

14. The terminal's unused cargo and bunker connections are properly secured with blank flanges fully bolted.

Unused cargo and bunker connections should be closed and blanked. Blank flanges should be fully bolted and other types of fittings, if used, properly secured.

15. All cargo, ballast and bunker tank lids are closed.

Apart from the openings in use for tank venting (see Question 29), all openings to cargo, ballast and bunker tanks should be closed and gas tight.

Except on gas tankers, ullaging and sampling points may be opened for the short periods necessary for ullaging and sampling, which activities should be conducted taking account of the controls necessary to avoid electrostatic discharge.

Closed ullaging and sampling systems should be used where required by international, national or local regulations and agreements.

16. Sea and overboard discharge valves, when not in use, are closed and visibly secured.

Experience shows the importance of this item in pollution avoidance on ships where cargo lines and ballast systems are interconnected. Remote operating controls for such valves should be identified in order to avoid inadvertent opening.

If appropriate, the security of the valves in question should be checked visually.



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17. All external doors, ports and windows in the accommodation, stores and machinery spaces are closed. Engine room vents may be open.

External doors, windows and portholes in the accommodation should be closed during cargo operations. These doors should be clearly marked as being required to be closed during such operations, but at no time should they be locked.

This requirement does not prevent reasonable access to spaces during operations, but doors should not be left open when unattended.

Engine room vents may be left open. However, consideration should be given to closing them where such action would not adversely affect the safe and efficient operation of the engine room spaces served.

18. The ship's emergency fire control plans are located externally.

A set of fire control plans should be permanently stored in a prominently marked weather-tight enclosure outside the accommodation block for the assistance of shoreside fire-fighting personnel. A crew list should also be included in this enclosure.

If the ship is fitted, or is required to be fitted, with an inert gas system (IGS), the following points should be physically checked:

19. Fixed IGS pressure and oxygen content recorders are working.

All recording equipment should be switched on, tested as per manufacturer's instructions and operating correctly.

20. All cargo tank atmospheres are at positive pressure with oxygen content of 8% or less by volume.

Prior to commencement of cargo operations, each cargo tank atmosphere should be checked to verify an oxygen content of 8% or less by volume. Inerted cargo tanks should be kept at a positive pressure at all times.

Part 'B' – Bulk Liquid General – Verbal Verification

21. The ship is ready to move under its own power.

The ship should be able to move under its own power at short notice, unless permission to immobilise the ship has been granted by the port authority and the Terminal Representative.

Certain conditions may have to be met for permission to be granted.

22. There is an effective deck watch in attendance on board and adequate supervision of operations on the ship and in the terminal.

The operation should be under constant control and supervision on the ship and in the terminal.

Supervision should be aimed at preventing the development of hazardous situations. However, if such a situation arises, the controlling personnel should have adequate knowledge and the means available to take corrective action.

The controlling personnel on the ship and in the terminal should maintain effective communications with their respective supervisors.

All personnel connected with the operations should be familiar with the dangers of the substances handled and should wear appropriate protective clothing and equipment.

23. There are sufficient personnel on board and ashore to deal with an emergency.

At all times during the ship's stay at the terminal, a sufficient number of personnel should be present on board the ship and in the shore installation to deal with an emergency.

24. The procedures for cargo, bunker and ballast handling have been agreed.

The procedures for the intended operation should be pre-planned. They should be discussed and agreed upon by the Responsible Officer and Terminal Representative prior to the start of the operations. Agreed arrangements should be formally recorded and signed by both the Responsible Officer and Terminal Representative. Any change in the agreed procedure that could affect the operation should be discussed by both parties and agreed upon. After both parties have reached agreement, substantial changes should be laid down in writing as soon as possible and in sufficient time before the change in procedure takes place. In any case, the change should be laid down in writing within the working period of those supervisors on board and ashore in whose working period agreement on the change was reached.

The operations should be suspended and all deck and vent openings closed on the approach of an electrical storm.

The properties of the substances handled, the equipment of ship and shore installation, and the ability of the ship's crew and shore personnel to execute the necessary operations and to sufficiently control the operations are factors which should be taken into account when ascertaining the possibility of handling a number of substances concurrently.

The manifold areas, both on board and ashore, should be safely and properly illuminated during darkness.

The initial and maximum loading rates, topping-off rates and normal stopping times should be agreed, having regard to:

- The nature of the cargo to be handled.
- The arrangement and capacity of the ship's cargo lines and gas venting systems.

- The maximum allowable pressure and flow rate in the ship/shore hoses and loading arms.
 - Precautions to avoid accumulation of static electricity.
 - Any other flow control limitations.
- A record to this effect should be formally made as above.

25. The emergency signal and shutdown procedure to be used by the ship and shore have been explained and understood.

The agreed signal to be used in the event of an emergency arising ashore or on board should be clearly understood by shore and ship personnel.

An emergency shutdown procedure should be agreed between ship and shore, formally recorded and signed by both the Responsible Officer and Terminal Representative.

The agreement should state the circumstances in which operations have to be stopped immediately.

Due regard should be given to the possible introduction of dangers associated with the emergency shutdown procedure.

26. Material Safety Data Sheets (MSDS) for the cargo transfer have been exchanged where requested.

An MSDS should be available on request to the receiver from the terminal or ship supplying the product.

As a minimum, such information sheets should provide the constituents of the product by chemical name, name in common usage, UN number and the maximum concentration of any toxic components, expressed as a percentage by volume or as ppm.

27. The hazards associated with toxic substances in the cargo being handled have been identified and understood.

Many tanker cargoes contain components that are known to be hazardous to human health. In order to minimise the impact on personnel, information on cargo constituents should be available during the cargo transfer to enable the adoption of proper precautions. In addition, some port states require such information to be readily available during cargo transfer and in the event of an accidental spill. This is particularly relevant to cargoes that could contain H₂S, benzene or lead additives.

28. An International Shore Fire Connection has been provided.

The connection must meet the standard requirements and, if not actually connected prior to commencement of operations, should be readily available for use in an emergency.

29. The agreed tank venting system will be used.

Agreement should be reached and recorded as to the venting system to be used for the operation, taking into account the nature of the cargo and international, national or local regulations and agreements.

There are three basic systems for venting tanks:

1. Open to atmosphere via open ullage ports, protected by suitable flame screens.
2. Fixed venting systems which includes inert gas systems.
3. To shore through a vapour collection system (see Question 32 below).

30. The requirements for closed operations have been agreed.

It is a requirement of many terminals that, when the ship is ballasting into cargo tanks, loading or discharging, it operates without recourse to opening ullage and sighting ports. In these cases, ships will require the means to enable closed monitoring of tank contents, either by a fixed gauging system or by using portable equipment passed through a vapour lock, and preferably backed up by an independent overflow alarm system.

31. The operation of the P/V system has been verified.

The operation of the P/V valves and/or high velocity vents should be checked using the testing facility provided by the manufacturer. Furthermore, it is imperative that an adequate check is made, visually or otherwise, to ensure that the checklift is actually operating the valve. On occasion, a seized or stiff vent has caused the checklift drive pin to shear and the ship's personnel to assume, with disastrous consequences, that the vent was operational.

32. Where a vapour return line is connected, operating parameters have been agreed.

Where required, a vapour return line will be used to return flammable vapours from the cargo tanks to shore.

The maximum and minimum operating pressures and any other constraints associated with the operation of the vapour return system should be discussed and agreed by ship and shore personnel.

33. Independent high level alarms, if fitted, are operational and have been tested.

Owing to the increasing reliance placed on gauging systems for closed cargo operations, it is important that such systems are fully operational and that backup is provided in the form of an independent overflow alarm arrangement.

The alarm should provide audible and visual indication and should be set at a level that will enable operations to be shut down prior to the tank being overfilled. Under normal operations, the cargo tank should not be filled higher than the level at which the overflow alarm is set.



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Individual overfill alarms should be tested at the tank to ensure their proper operation prior to commencing loading unless the system is provided with an electronic self-testing capability which monitors the condition of the alarm circuitry and sensor and confirms the instrument set point.

34. Adequate electrical insulating means are in place in the ship/shore connection.

Unless measures are taken to break the continuous electrical path between ship and shore pipework provided by the ship/shore hoses or metallic arms, stray electric currents, mainly from corrosion prevention systems, can cause electric sparks at the flange faces when hoses are being connected and disconnected. The passage of these currents is usually prevented by an insulating flange inserted at each jetty manifold outlet or incorporated in the construction of metallic arms. Alternatively, the electrical discontinuity may be provided by the inclusion of one length of electrically discontinuous hose in each hose string. It should be ascertained that the means of electrical discontinuity is in place, that it is in good condition and is not being by-passed by contact with an electrically conductive material.

35. Shore lines are fitted with a non-return valve, or procedures to avoid back filling have been discussed.

In order to avoid cargo running back when discharge from a ship is stopped, either due to operational needs or excessive back pressure, the terminal should confirm that it has a positive system that will prevent unintended flow from the shore facility onto the ship. Alternatively, a procedure should be agreed that will protect the ship.

36. Smoking rooms have been identified and smoking requirements are being observed.

Smoking on board the ship may only take place in areas specified by the Master in consultation with the Terminal Representative.

No smoking is allowed on the jetty and the adjacent area, except in buildings and places specified by the Terminal Representative in consultation with the Master. Places that are directly accessible from the outside should not be designated as places where smoking is permitted. Buildings, places and rooms designated as areas where smoking is permitted should be clearly marked as such.

37. Naked light regulations are being observed.

A naked light or open fire comprises the following: flame, spark formation, naked electric light or any surface with a temperature that is equal to or higher than the auto-ignition temperature of the products handled in the operation.

The use of naked lights or open fires on board the ship, and within a distance of 25 metres of the ship, should be prohibited, unless all applicable regulations have been met and agreement reached by the port authority, Terminal Representative and the Master. This distance may have to be extended for ships of a specialised nature such as gas tankers.

38. Ship/shore telephones, mobile phones and pager requirements are being observed.

Ship/shore telephones should comply with the requirements for explosion-proof construction, except when placed and used in a safe space in the accommodation.

Mobile telephones and pagers should not be used in hazardous areas unless approved for such use by a competent authority.

39. Hand torches (flashlights) are of an approved type.

Battery operated hand torches (flashlights) should be of a safe type, approved by a competent authority. Damaged units, even though they may be capable of operation, should not be used.

40. Fixed VHF/UHF transceivers and AIS equipment are on the correct power mode or switched off.

Fixed VHF/UHF and AIS equipment should be switched off or on low power (1 watt or less) unless the Master, in consultation with the Terminal Representative, has established the conditions under which the installation may be used safely.

41. Portable VHF/UHF transceivers are of an approved type.

Portable VHF/UHF sets should be of a safe type, approved by a competent authority.

VHF radio telephone sets may only operate in the internationally agreed wave bands.

Equipment should be well maintained. Damaged units, even though they may be capable of operation, should not be used.

42. The ship's main radio transmitter aerials are earthed and radars are switched off.

The ship's main radio station should not be used during the ship's stay in port, except for receiving purposes. The main transmitting aerials should be disconnected and earthed.

Satellite communications equipment may be used normally, unless advised otherwise.

The ship's radar installation should not be used unless the Master, in consultation with the Terminal Representative, has established the conditions under which the installation may be used safely.

43. Electric cables to portable electrical equipment within the hazardous area are disconnected from power.

The use of portable electrical equipment on wandering leads should be prohibited in hazardous zones during cargo operations, and the equipment preferably removed from the hazardous zone.

Telephone cables in use in the ship/shore communication system should preferably be routed outside the hazardous zone. Wherever this is not feasible, the cable should be so positioned and protected that no danger arises from its use.

44. Window type air conditioning units are disconnected.

Window type air conditioning units should be disconnected from their power supply.

45. Positive pressure is being maintained inside the accommodation, and air conditioning intakes, which may permit the entry of cargo vapours, are closed.

A positive pressure should, when possible, be maintained inside the accommodation, and procedures or systems should be in place to prevent flammable or toxic vapours from entering accommodation spaces. This can be achieved by air conditioning or similar systems, which draw clean air from non-hazardous locations.

Air conditioning systems should not be operated on 100% recirculation.

46. Measures have been taken to ensure sufficient mechanical ventilation in the pumproom.

Pumprooms should be mechanically ventilated and the ventilation system, which should maintain a safe atmosphere throughout the pumproom, should be kept running throughout cargo handling operations. The gas detection system, if fitted, should be functioning correctly.

47. There is provision for an emergency escape.

In addition to the means of access referred to in Question 1, a safe and quick emergency escape route should be available both on board and ashore. On board the ship, it may consist of a lifeboat ready for immediate use, preferably at the after end of the ship, and clear of the moorings.

48. The maximum wind and swell criteria for operations have been agreed.

There are numerous factors which will help determine whether cargo or ballast operations should be discontinued. Discussion between the terminal and the ship should identify limiting factors, which could include:

- Wind speed and direction and the effect on hard arms.
 - Wind speed and direction and the effect on mooring integrity.
 - Wind speed and direction and the effect on gangways.
 - At exposed terminals, swell effects on moorings or gangway safety.
- Such limitations should be clearly understood by both parties. The criteria for stopping cargo, disconnecting hoses or arms and vacating the berth should be written in the 'Remarks' column of the check-list.

49. Security protocols have been agreed between the Ship Security Officer and the Port Facility Security Officer, if appropriate.

In states that are signatories to SOLAS, the ISPS Code requires that the Ship Security Officer and the Port Facility Security Officer co-ordinate the implementation of their respective security plans with each other.

50. Where appropriate, procedures have been agreed for receiving nitrogen supplied from shore, either for inerting or purging ship's tanks, or for line clearing into the ship.

Ship and shore should agree in writing on the inert gas supply, specifying the volume required, and the flow rate in cubic metres per minute. The sequence of opening valves before beginning the operation and after completion should be agreed, so that the ship remains in control of the flow. Attention should be given to the adequacy of open vents on a tank in order to avoid the possibility of over-pressurisation.

The tank pressure should be closely monitored throughout the operation. The ship's agreement should be sought when the terminal wishes to use compressed nitrogen (or air) as a propellant, either for pigging to clear shore lines into the ship or to press cargo out of shore containment. The ship should be informed of the pressure to be used and the possibility of receiving gas into a cargo tank.

If the ship is fitted, or is required to be fitted, with an inert gas system (IGS) the following statements should be addressed:

51. The IGS is fully operational and in good working order.

The inert gas system should be in safe working condition with particular reference to all interlocking trips and associated alarms, deck seal, non-return valve, pressure regulating control system, main deck IG line pressure indicator, individual tank IG valves (when fitted) and deck P/V breaker. Individual tank IG valves (if fitted) should have easily identified and fully functioning open/close position indicators.

52. Deck seals, or equivalent, are in good working order.

It is essential that the deck seal arrangements are in a safe condition. In particular, the water supply arrangements to the seal and the proper functioning of associated alarms should be checked.



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53. Liquid levels in pressure/vacuum breakers are correct.

Checks should be made to ensure that the liquid level in the P/V breaker complies with manufacturer's recommendations.

54. The fixed and portable oxygen analysers have been calibrated and are working properly.

All fixed and portable oxygen analysers should be tested and checked as required by the Company and/or manufacturer's instructions and should be operating correctly.

The in-line oxygen analyser/recorder and sufficient portable oxygen analysers should be working properly.

The calibration certificate should show that its validity is as required by the ship's SMS.

55. All the individual tank IG valves (if fitted) are correctly set and locked.

For both loading and discharge operations, it is normal and safe to keep all individual tank IG supply valves (if fitted) open in order to prevent inadvertent under or over-pressurisation. In this mode of operation, each tank pressure will be the same as the deck main IG pressure and thus the P/V breaker will act as a safety valve in case of excessive over or under-pressure. If individual tank IG supply valves are closed for reasons of potential vapour contamination or de-pressurisation for gauging etc, then the status of the valve should be clearly indicated to all those involved in cargo operations. Each individual tank IG valve should be fitted with a locking device under the control of a Responsible Officer.

56. All personnel in charge of cargo operations are aware that, in the case of failure of the inert gas plant, discharge operations should cease and the terminal be advised.

In the case of failure of the IG plant, the cargo discharge, de-ballasting and tank cleaning operations should cease and the terminal be advised.

Under no circumstances should the ship's officers allow the atmosphere in any tank to fall below atmospheric pressure.

If the ship is fitted with a Crude Oil Washing (COW) system, and intends to crude oil wash, the following statements should be addressed:

57. The Pre-Arrival COW Check-List, as contained in the approved COW Manual, has been satisfactorily completed.

The approved Crude Oil Washing Manual contains a Pre-Arrival Crude Oil Washing Check-List, specific to each ship, which should be completed by the Responsible Officer prior to arrival at every discharge port where it is intended to undertake Crude Oil Washing.

58. The COW check-lists for use before, during and after COW, as contained in the approved COW Manual, are available and being used.

The approved Crude Oil Washing Manual contains a Crude Oil Washing Check-List, specific to each ship, for use before, during and after Crude Oil Washing operations. This Check-List should be completed at the appropriate times and the Terminal Representative should be invited to participate.

If the ship is planning to tank clean alongside, the following statements should be addressed:

59. Tank cleaning operations are planned during the ship's stay alongside the store installation.

During the pre-transfer discussion between the Responsible Officer and Terminal Representative, it should be established whether any tank cleaning operations are planned while the ship is alongside and the check-list should be annotated accordingly.

60. If 'yes', the procedures and approvals for tank cleaning have been agreed.

It should be confirmed that all necessary approvals that may be required to enable tank cleaning to be undertaken alongside have been obtained from relevant authorities. The method of tank cleaning to be used should be agreed, together with the scope of the operation.

61. Permission has been granted for gas freeing operations.

It should be confirmed that all necessary approvals that may be required to enable gas freeing to be undertaken alongside have been obtained from the relevant authorities.

Part 'C' – Bulk Liquid Chemicals – Verbal Verification

1. Material Safety Data Sheets are available giving the necessary data for the safe handling of the cargo.

Information on the product to be handled should be available on board the ship and ashore and should include:

- A full description of the physical and chemical properties, including reactivity, necessary for the safe containment and transfer of the cargo.
- Action to be taken in the event of spills or leaks.
- Countermeasures against accidental personal contact.
- Fire-fighting procedures and fire-fighting media.

2. A manufacturer's inhibition certificate, where applicable, has been provided.

Where cargoes are required to be stabilised or inhibited in order to be handled, ships should be provided with a certificate from the manufacturer stating:

- Name and amount of inhibitor added.
- Date inhibitor was added and the normal duration of its effectiveness.
- Any temperature limitations affecting the inhibitor.
- The action to be taken should the length of the voyage exceed the effective lifetime of the inhibitor.

3. Sufficient protective clothing and equipment (including self-contained breathing apparatus) is ready for immediate use and is suitable for the product being handled.

Suitable protective equipment (including self-contained breathing apparatus and protective clothing) appropriate to the specific dangers of the product handled, should be readily available in sufficient quantity for operational personnel both on board and ashore.

4. Countermeasures against accidental personal contact with the cargo have been agreed.

Sufficient and suitable means should be available to neutralise the effects and remove small quantities of spilled products. Should unforeseen personal contact occur, in order to limit the consequences it is important that sufficient and suitable countermeasures are undertaken.

The MSDS should contain information on how to handle such contact with reference to the special properties of the cargo, and personnel should be aware of the procedures to follow.

A suitable safety shower and eye rinsing equipment should be fitted and ready for instant use in the immediate vicinity of places on board or ashore where operations regularly take place.

5. The cargo handling rate is compatible with the automatic shutdown system, if in use.

Automatic shutdown valves may be fitted on the ship and ashore. The action of these is automatically initiated by, for example, a certain level being reached in the ship or shore tank being filled. Where such systems are used, the cargo handling rate should be established to prevent pressure surges from the automatic closure of valves causing damage to ship or shore line systems.

Alternative means, such as a re-circulation system and buffer tanks, may be fitted to relieve the pressure surge created.

A written agreement should be made between the Responsible Officer and Terminal Representative indicating whether the cargo handling rate will be adjusted or alternative systems will be used.

6. Cargo system gauges and alarms are correctly set and in good order.

Ship and shore cargo system gauges and alarms should be checked regularly to ensure they are in good working order.

In cases where it is possible to set alarms to different levels, the alarm should be set to the required level.

7. Portable vapour detection instruments are readily available for the products being handled.

The equipment provided should be capable of measuring, where appropriate, flammable and/or toxic levels.

Suitable equipment should be available for operational testing of those instruments capable of measuring flammability. Operational testing should be carried out before using the equipment. Calibration should be carried out in accordance with the Safety Management System.

8. Information on fire-fighting media and procedures has been exchanged.

Information should be exchanged on the availability of fire-fighting equipment and the procedures to be followed in the event of a fire on board or ashore.

Special attention should be given to any products that are being handled which may be water reactive or which require specialised fire-fighting procedures.

9. Transfer hoses are of suitable material, resistant to the action of the products being handled.

Each transfer hose should be indelibly marked so as to allow the identification of the products for which it is suitable, its specified maximum working pressure, the test pressure and last date of testing at this pressure, and, if used at temperatures other than ambient, its maximum and minimum service temperatures.

10. Cargo handling is being performed with the permanently installed pipeline system.

All cargo transfer should be through permanently installed pipeline systems on board and ashore.

Should it be necessary, for specific operational reasons, to use portable cargo lines on board or ashore, care should be taken to ensure that these lines are correctly positioned and assembled in order to minimise any additional risks associated with their use. Where necessary, the electrical continuity of these lines should be checked and their length should be kept as short as possible.

The use of non-permanent transfer equipment inside tanks is not generally permitted unless specific approvals have been obtained.



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Whenever cargo hoses are used to make connections within the ship or shore permanent pipeline system, these connections should be properly secured, kept as short as possible and be electrically continuous to the ship and shore pipeline respectively. Any hoses used must be suitable for the service and be properly tested, marked and certified.

11. Where appropriate, procedures have been agreed for receiving nitrogen supplied from shore, either for inerting or purging ship's tanks, or for line clearing into the ship.

Ship and shore should agree in writing on the nitrogen supply, specifying the volume required, and the flow rate in cubic metres per minute. The sequence of opening valves before beginning the operation and after completion should be agreed, so that the ship remains in control of the flow. Attention should be given to the adequacy of open vents on a tank in order to avoid the possibility of over-pressurisation.

The tank pressure should be closely monitored throughout the operation.

The ship's agreement should be sought when the terminal wishes to use compressed nitrogen (or air) as a propellant, either for pigging to clear shore lines into the ship or to press cargo out of shore containment. The ship should be informed of the pressure to be used and the possibility of receiving gas into a cargo tank.

Part 'D' – Bulk Liquefied Gases – Verbal Verification

1. Material Safety Data Sheets are available giving the necessary data for the safe handling of the cargo.

Information on each product to be handled should be available on board the ship and ashore before and during the operation.

Cargo information, in a written format, should include:

- A full description of the physical and chemical properties necessary for the safe containment of the cargo.
- Action to be taken in the event of spills or leaks.
- Countermeasures against accidental personal contact.
- Fire-fighting procedures and fire-fighting media.
- Any special equipment needed for the safe handling of the particular cargo(es).
- Minimum allowable inner hull steel temperatures.
- Emergency procedures.

2. A manufacturer's inhibition certificate, where applicable, has been provided.

Where cargoes are required to be stabilised or inhibited in order to be handled, ships should be provided with a certificate from the manufacturer stating:

- Name and amount of inhibitor added.
- Date inhibitor was added and the normal duration of its effectiveness.
- Any temperature limitations affecting the inhibitor.
- The action to be taken should the length of the voyage exceed the effective lifetime of the inhibitor.

3. The water spray system is ready for immediate use.

In cases where flammable or toxic products are handled, water spray systems should be tested regularly. Details of the last tests should be exchanged. During operations, the systems should be kept ready for immediate use.

4. There is sufficient suitable protective equipment (including self-contained breathing apparatus) and protective clothing ready for immediate use.

Suitable protective equipment, including self-contained breathing apparatus, eye protection and protective clothing appropriate to the specific dangers of the product handled should be available in sufficient quantity for operational personnel, both on board and ashore.

Storage places for this equipment should be protected from the weather and be clearly marked.

All personnel directly involved in the operation should utilise this equipment and clothing whenever the situation requires.

Personnel required to use breathing apparatus during operations should be trained in its safe use. Untrained personnel and personnel with facial hair should not be selected for operations involving the use of breathing apparatus.

5. Hold and inter-barrier spaces are properly inerted or filled with dry air, as required.

The spaces that are required to be inerted by the IMO Gas Carrier Codes should be checked by ship's personnel prior to arrival.

6. All remote control valves are in working order.

All ship and shore cargo system remote control valves and their position-indicating systems should be tested regularly. Details of the last tests should be exchanged.

7. The required cargo pumps and compressors are in good order, and the maximum working pressures have been agreed between ship and shore.

Agreement in writing should be reached on the maximum allowable working pressure in the cargo line system during operations.

8. Re-liquefaction or boil-off control equipment is in good order.

It should be verified that re-liquefaction and boil-off control systems, if required, are functioning correctly prior to commencement of operations.

9. The gas detection equipment has been properly set for the cargo, is calibrated, has been tested and inspected and is in good order.

Suitable gas should be available to enable operational testing of gas detection equipment. Fixed gas detection equipment should be tested for the product to be handled prior to commencement of operations. The alarm function should have been tested and the details of the last test should be exchanged.

Portable gas detection instruments, suitable for the products handled, capable of measuring flammable and/or toxic levels, should be available.

Portable instruments capable of measuring in the flammable range should be operationally tested for the product to be handled before operations commence.

Calibration of instruments should be carried out in accordance with the Safety Management System.

10. Cargo system gauges and alarms are correctly set and in good order.

Ship and shore cargo system gauges should be checked regularly to ensure that they are in good working order.

In cases where it is possible to set alarms to different levels, the alarm should be set to the required level.

11. Emergency shutdown systems have been tested and are working properly.

Where possible, ship and shore emergency shutdown systems should be tested before commencement of cargo transfer.

12. Ship and shore have informed each other of the closing rate of ESD valves, automatic valves or similar devices.

Automatic shutdown valves may be fitted in the ship and the shore systems.

Among other parameters, the action of these valves can be automatically initiated by a certain level being reached in the tank being loaded, either on board or ashore.

The closing rate of any automatic valves should be known and this information should be exchanged.

Where automatic valves are fitted and used, the cargo handling rate should be so adjusted that a pressure surge evolving from the automatic closure of any such valve does not exceed the safe working pressure of either the ship or shore pipeline systems.

Alternatively, means may be fitted to relieve the pressure surge created, such as re-circulation systems and buffer tanks.

A written agreement should be made between the Responsible Officer and Terminal Representative indicating whether the cargo handling rate will be adjusted or alternative systems will be used. The safe cargo handling rate should be noted in the agreement.

13. Information has been exchanged between ship and shore on the maximum/minimum temperatures/pressures of the cargo to be handled.

Before operations commence, information should be exchanged between the Responsible Officer and Terminal Representatives on cargo temperature/pressure requirements.

This information should be in writing.

14. Cargo tanks are protected against inadvertent overfilling at all times while any cargo operations are in progress.

Automatic shutdown systems are normally designed to close the liquid valves, and if discharging, to trip the cargo pumps, should the liquid level in any tank rise above the maximum permitted level. This level must be accurately set and the operation of the device should be tested at regular intervals.

If ship and shore shutdown systems are to be inter-connected, then their operation must be checked before cargo transfer begins.

15. The compressor room is properly ventilated, the electrical motor room is properly pressurised and the alarm system is working.

Fans should be run for at least 10 minutes before cargo operations commence and then continuously during cargo operations.

Audible and visual alarms, provided at airlocks associated with compressor/motor rooms, should be tested regularly.

16. Cargo tank relief valves are set correctly and actual relief valve settings are clearly and visibly displayed.

In cases where cargo tanks are permitted to have more than one relief valve setting, it should be verified that the relief valve is set as required by the cargo to be handled and that the actual setting of the relief valve is clearly and visibly displayed on board the ship. Relief valve settings should be recorded in the check-list.